

What is claimed is:

1. A computer-implemented method of changing a status of a portion of network address space from free to another status, comprising:
 - receiving a request of a block size to allocate for a current network with a new status;
 - detecting within a definitional listing for the network address space, a block with free status of sufficient size to cover the block size to allocate; and
 - assigning, for the current network, the new status to the detected block within the definitional listing.
2. The computer-implemented method of claim 1, wherein determining a block size to allocate comprises receiving user input specifying a mask size.
3. The computer-implemented method of claim 1, wherein determining a block size to allocate comprises receiving user input specifying a netmask.
4. The computer-implemented method of claim 1, wherein determining a block size to allocate comprises receiving a beginning value and an ending value.
5. The computer-implemented method of claim 1, wherein receiving the request further comprises receiving a fit selection from the group comprising:
 - next block fit;
 - utilization fit; and
 - rated fit.
6. The computer-implemented method of claim 5, wherein when receiving the request includes receiving a next block fit, then selecting the next block of network address space with respect to address order to assign.

7. The computer-implemented method of claim 6, wherein selecting the next block comprises selecting the next block according to a pre-defined network allocation order.
8. The computer-implemented method of claim 5, wherein when receiving the request includes receiving a utilization fit, then selecting a block of the smallest defined block size from an address range including blocks of the requested size or larger.
9. The computer-implemented method of claim 8, further comprising breaking ties between blocks of a same size according to a pre-defined network allocation order.
10. The computer-implemented method of claim 5, wherein when receiving the request includes receiving a rated fit, then rating each block of the current network of at least the requested size according to a block size and whether there is aggregation with child descendant aggregate blocks and selecting a block with the best rating.
11. The computer-implemented method of claim 10, wherein rating each block - comprises utilizing rated fit parameters previously tuned by a user.
12. The computer-implemented method of claim 1, further comprising:
 - detecting whether a block of the requested size exists within the network address space assigned to the current network;
 - when a block of the requested size does not exist within the network address space assigned to the current network, lending a block from a second network that aggregates with the current network.
13. The computer-implemented method of claim 12, wherein receiving the request further comprises receiving a specified range to allocate from, the method further comprising when a block of the requested size does not exist within the specified range but does exist within the current network, returning a fail indication and not lending a block from another network that aggregates with the current network.

14. The computer-implemented method of claim 12, wherein lending a block from another network comprises:

detecting whether a block of at least the requested size exists within a specified range of the network address space assigned to the second network;

when a block of at least the requested size exists within a specified range of the network address space assigned to the second network, splitting the block until it is the requested size and moving a resulting block from the second network to the current network as represented within the definitional listing; and

when a block of the requested size does not exist within the specified range, lending a block from a third network that aggregates with the second network.

15. The computer-implemented method of claim 14, wherein when lending a block from the second network includes receiving a rated fit selection, the method further comprises:

rating each block of the second network of at least the requested size according to a block size and whether there is aggregation with child descendant aggregate blocks of a requesting or other child network; and

selecting a block with the best rating.

16. The computer-implemented method of claim 1, further comprising:

detecting whether a block of the definitional listing is larger than the requested size;

when the block is larger than the requested size, then splitting the block and selecting a portion resulting from the split according to a predefined network allocation order and repeating until the remaining block is not larger than the requested size.

17. A computer-implemented method of changing a status of a portion of network address space from a first status to a free status, comprising:
 - receiving a request of a block to deallocate for a current network to the free status;
 - and
 - assigning, for the current network, the free status to the requested block within a definitional listing for the network address space.

18. The computer-implemented method of claim 17, wherein assigning the free status to the requested block comprises coalescing the requested block together with an adjacent block having free status to create a resulting combined block with free status.

19. The computer-implemented method of claim 18, further comprising repeating the coalescing of the resulting combined block with an adjacent block with free status until the adjacent block is not free or not available within the network.

20. The computer-implemented method of claim 17, further comprising:
 - detecting whether the current network has a re-use interval; and
 - when the current network has a re-use interval, delaying until the expiration of the re-use interval before assigning the free status to the requested block.

21. The computer-implemented method of claim 20, further comprising setting the status of the requested block to re-use delay while delaying until the expiration of the re-use interval.

22. The computer-implemented method of claim 17, further comprising:
 - detecting whether a reclaim of the requested block is pending; and
 - when a reclaim of the requested block is pending, then proceeding with a reclaim of the requested block rather than assigning the free status to the requested block.

23. A computer-implemented method of changing a status of a portion of network address space from a first status to a status of a reclaim, comprising:
receiving a reclaim action request for a block of a current network;
detecting whether the entire block to reclaim is in a reclaim pending status; and
when the entire block to reclaim is in the reclaim pending status, performing the reclaim action upon the entire block within a definitional listing for the network address space.
24. The computer-implemented method of claim 23, further comprising prior to detecting whether the entire block to reclaim is in a reclaim pending status, marking all blocks having a free status that are within the block to reclaim with the reclaim pending status.
25. The computer-implemented method of claim 24, further comprising:
upon detecting that the entire block to reclaim is not in a reclaim pending status, monitoring the definitional listing to detect a change to the free status for one or more blocks within the block to reclaim that are not in the reclaim pending status; and
upon detecting the change to the free status for one or more of the blocks within the block to reclaim that are not in a reclaim pending status, assigning the reclaim pending status to the one or more blocks that have changed to the free status.
26. The computer-implemented method of claim 25, wherein prior to assigning the reclaim pending status to the one or more blocks that have changed to the free status, the method further comprising splitting at least one block containing one or more of the blocks within the block to reclaim and one or more blocks that are not within the block to reclaim.

27. A computer system for changing a status of a portion of network address space from free to another status, comprising:

storage containing a definitional listing for the network address space that defines the status of blocks of the network address space;

a processor in communication with the storage and being configured to receive a request of a block size to allocate for a current network with a new status, detect within the definitional listing a block with free status of sufficient size to cover the block size to allocate, and assign, for the current network, the new status to the detected block within the definitional listing.

28. The computer system of claim 27, wherein the processor is further configured to receive a fit selection, and according to the fit selection, detect the block with the free status that is of sufficient size and assign the new status to the detected block.

29. The computer system of claim 27, wherein the processor is further configured to receive a specified range to allocate from, detect whether a block of the requested size exists within the specified range of the network address space assigned to the current network, and when a block of the requested size does not exist within the specified range, lending a block from a second network that aggregates with the current network.

30. A computer system for changing a status of a portion of network address space from a first status to a free status, comprising:

storage containing a definitional listing for the network address space that defines the status of blocks of the network address space; and

a processor in communication with the storage and being configured to receive a request of a block to deallocate for a current network to the free status and assign, for the current network, the free status to the requested block within the definitional listing.

31. The computer system of claim 30, wherein the processor is configured to assign the free status to the requested block and to coalesce the requested block together with an adjacent block having a free status to create a resulting combined block with free status and repeating the coalescing of the resulting combined block with an adjacent block with free status until the adjacent block is not free or not available in the network.

32. The computer system of claim 30, wherein the processor is further configured to detect whether the current network has a re-use interval, delay until the expiration of the re-use interval before assigning the free status to the requested block when the current network has a re-use interval, and set the status of the requested block to re-use delay while delaying until the expiration of the re-use interval.

33. A computer system for changing a status of a portion of network address space from a first status to a status of a reclaim, comprising:

storage containing a definitional listing for the network address space that defines the status of blocks of the network address space; and

a processor in communication with the storage and being configured to receive a reclaim action request for a block of a current network, detect whether the entire block to reclaim is in a reclaim pending status, and when the entire block to reclaim is in the reclaim pending status, perform the reclaim action upon the entire block within the definitional listing.

34. The computer system of claim 33, wherein prior to the processor detecting whether the entire block to reclaim is in a reclaim pending status, the processor is further configured to mark all blocks having a free status that are within the block to reclaim with the reclaim pending status.

35. The computer system of claim 34, wherein the processor is further configured to, upon detecting that the entire block to reclaim is not in a reclaim pending status, monitor the definitional listing to detect a change to the free status for one or more blocks within the block to reclaim that are not in the reclaim pending status and upon detecting the change to the free status for one or more of the blocks within the block to reclaim that are not in a reclaim pending status, assign the reclaim pending status to the one or more blocks that have changed to the free status.

36. A computer readable medium containing instructions that when executed by a computer perform steps for changing a status of a portion of network address space from free to another status, the steps comprising:

receiving a request of a block size to allocate for a current network with a new status;

detecting within a definitional listing for the network address space, a block with free status of sufficient size to cover the block size to allocate; and

assigning, for the current network, the new status to the detected block within the definitional listing.

37. The computer readable medium of claim 36, wherein the steps further comprise determining a block size to allocate receiving user input from the group comprising:

a mask size;

a netmask; and

a beginning value and an ending value.

38. The computer readable medium of claim 36, wherein receiving the request further comprises receiving a fit selection from the group comprising:

next block fit;

utilization fit; and

rated fit.

39. The computer readable medium of claim 36, wherein the steps further comprise: detecting whether a block of the definitional listing is larger than the requested size;

when the block is larger than the requested size, then splitting the block and selecting a portion resulting from the split according to a predefined network allocation order and repeating until the remaining block is not larger than the requested size.

40. A computer readable medium containing instructions that when executed by a computer perform steps for changing a status of a portion of network address space from a first status to a free status, the steps comprising:

receiving a request of a block to deallocate for a current network to the free status;

and

assigning, for the current network, the free status to the requested block within a definitional listing for the network address space.

41. The computer readable medium of claim 40, wherein the steps further comprise:

detecting whether a reclaim of the requested block is pending; and

when a reclaim of the requested block is pending, then continuing with a reclaim of the requested block rather than assigning the free status to the requested block.

42. A computer readable medium containing instructions that when executed by a computer perform steps for changing a status of a portion of network address space from a first status to a status of a reclaim, the steps comprising:

receiving a reclaim action request for a block of a current network;
detecting whether the entire block to reclaim is in a reclaim pending status; and
when the entire block to reclaim is in the reclaim pending status, performing the reclaim action upon the entire block within a definitional listing for the network address space.

43. The computer readable medium of claim 42, wherein the steps further comprise:
prior to detecting whether the entire block to reclaim is in a reclaim pending status, marking all blocks having a free status that are within the block to reclaim with the reclaim pending status;

upon detecting that the entire block to reclaim is not in a reclaim pending status, monitoring the definitional listing to detect a change to the free status for one or more blocks within the block to reclaim that are not in the reclaim pending status;

upon detecting the change to the free status for one or more of the blocks within the block to reclaim that are not in a reclaim pending status, assigning the reclaim pending status to the one or more blocks that have changed to the free status; and

prior to assigning the reclaim pending status to the one or more blocks that have changed to the free status, splitting at least one block containing one or more of the blocks within the block to reclaim and one or more blocks that are not within the block to reclaim.